CLAIMS

Claimed is:

1. A process for detecting an initiation of a burst in a digital received signal $r(v)$ during use of a digital reference signal $p(v)$, said process comprising the following procedural steps:

executing a correlation by formation of a cost function $L(v_o)$ with a correlation function within a correlation interval dependent upon a time delay of the received signal $r(v)$ relative to a bit offset or a chip offset $v_o$, which is characterized by reference signal $p(v)$, whereby addends of the correlation function were multiplied by a frequency offset correction factor, namely $e^{-j2\pi\Delta \tilde{f} v}$, the frequency offset correction factor being characterized by a frequency offset $\Delta \tilde{f}$ of the received signal $r(v)$ relative to the reference signal $p(v)$; and

seeking a maximum $Max(L)$ of the cost function $L(v_o)$ dependent upon the bit offset or the chip offset $v_o$ and upon the frequency offset $\Delta \tilde{f}$ whereby the maximum $Max(L)$, following a carrying out of a Fourier Transform is sought in a frequency space.

2. The process of claim 1, wherein the cost function $L(v_o)$ is formed corresponding to the equation: $L(v_o, \Delta \tilde{f}) = \left| \sum_{v=0}^{N-1} r(v - v_0) p^*(v) \cdot e^{-j2\pi\Delta \tilde{f} v} \right|$

wherein:

$r(v)$      is the received signal
$v$      is a bit index or a chip index
$p^*(v)$      is a conjugate complex reference signal
$v_o$      is the bit offset or the chip offset
$\Delta \tilde{f}$      is the frequency offset, and
$N$      is a length of the correlation interval.

3. The process of claim 2, wherein the maximum $Max(L)$ of the cost function $L(v_o)$, by the determination of the maximum of a power spectrum, is sought in the frequency space, said power spectrum being:

$$\left| \tilde{R}(f, v_0) \right| = \left| \sum_{v=0}^{N_{FFT}-1} r(v - v_0) p^*(v) \cdot e^{-j\frac{2\pi}{N_{FFT}} \cdot f \cdot v} \right|$$

wherein

$N_{FFT}$      is a length of a discrete Fourier Transform, and

$f$      is an estimated frequency offset $\Delta \tilde{f}$ multiplied by $N_{FFT}$.

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4.  The process of claim 1, wherein the correlation is executed in a plurality of time related offset correlation intervals $K \cdot N$ and the thereby obtained correlation results $R_{r,p}(v_0, k)$ are incoherently determined.

5.  The process of claim 1, wherein before the correlation an instantaneous power $P(v)$ of the received signal $r(v)$ is determined and the correlation is only executed in one range, wherein the instantaneous power $P(v)$ is greater than a power threshold $TH \cdot MIN \{P(v)\}$.

6.  The process of claim 5, wherein the instantaneous power $P(v)$ is determined by the equation:

    $$P(v) = \lambda \cdot P(v - 1) + (1 - \lambda) \cdot |r(v)|^2$$

    wherein:

    $r(v)$     is the received signal

    $v$     is the bit index or the chip index

    $\lambda$     is a constant greater than 0 and less than 1.

7.  A digital memory storage medium with electronically based read-out control systems, said digital memory storage medium being adapted to coact with a programmable computer or a digital processor to conduct the process of claim 1.

8.  A computer program product with program code means, said computer program product being stored on a machine-readable carrier and adapted to conduct all steps in accordance with claim 1 when the program is executed on a computer or on a digital signal processor.

9.  A computer program with program code means, said computer program being adapted to carry out all steps in accordance with claim 1 when the computer program is executed on a computer or on a digital signal processor.

10. A computer program with program code means, said computer program being adapted to execute all steps in accordance with claim 1 when the computer program is stored in a machine readable data carrier.